COMPUTING DIVISION
EFFORT REPORTING SYSTEM
DATA FLOW

Contents

System Scope

Currently, the Computing Division's (CD) budget and employee effort is entered and tracked using independent software applications and Enterprise Databases that share only minimum data. Budget is entered in the CD Budget Input System and employee effort is entered and reviewed in the CD Effort Reporting System. As the lab moves forward to electronic timecards, CD is incorporating in its applications the new FTL system by providing in a structured and coherent way the necessary data and by extracting and storing data from the FTL system for review and budget comparison/correction purposes.

Definitions

For the purposes of this document all references to database tables are for those in the CD Enterprise Oracle Database. Any application specific data and supporting databases are outside the scope of this document and will not be discussed.

A **Task** is used to refer to the combination of a project and a corresponding task number/name as defined in the Lab Project Accounting system.

A **Project** is used to refer to a lab project, e.g. project 50, 10, 55 etc.

A **Task** is defined by:
- its project ID and name,
- its task ID and name,
- its task organization,
- its start and end dates,
- its operating type and other lab defined fields
- and internal DB identifiers

An **Activity** is defined by:
- its name (which gives the activity context),
- its FTL short name (80 characters),
- its default/special task mapping,
- its community restrictions,
- its start and end dates,
- its owner (department, group),
- and internal DB identifiers

A **Mapping** (default or special) is defined for:

- an activity,
- a task,
- a mapping percent,
- a community,
- a start and end date,
- and internal DB identifiers

An **Activity Restriction** is defined for:

- an activity,
- a community,
- a start and end date,
- and internal DB identifiers

A **SWF Budget Line Item** is defined for:

- an activity,
- a task,
- a person,
- an FTE fraction,
- a fiscal year,
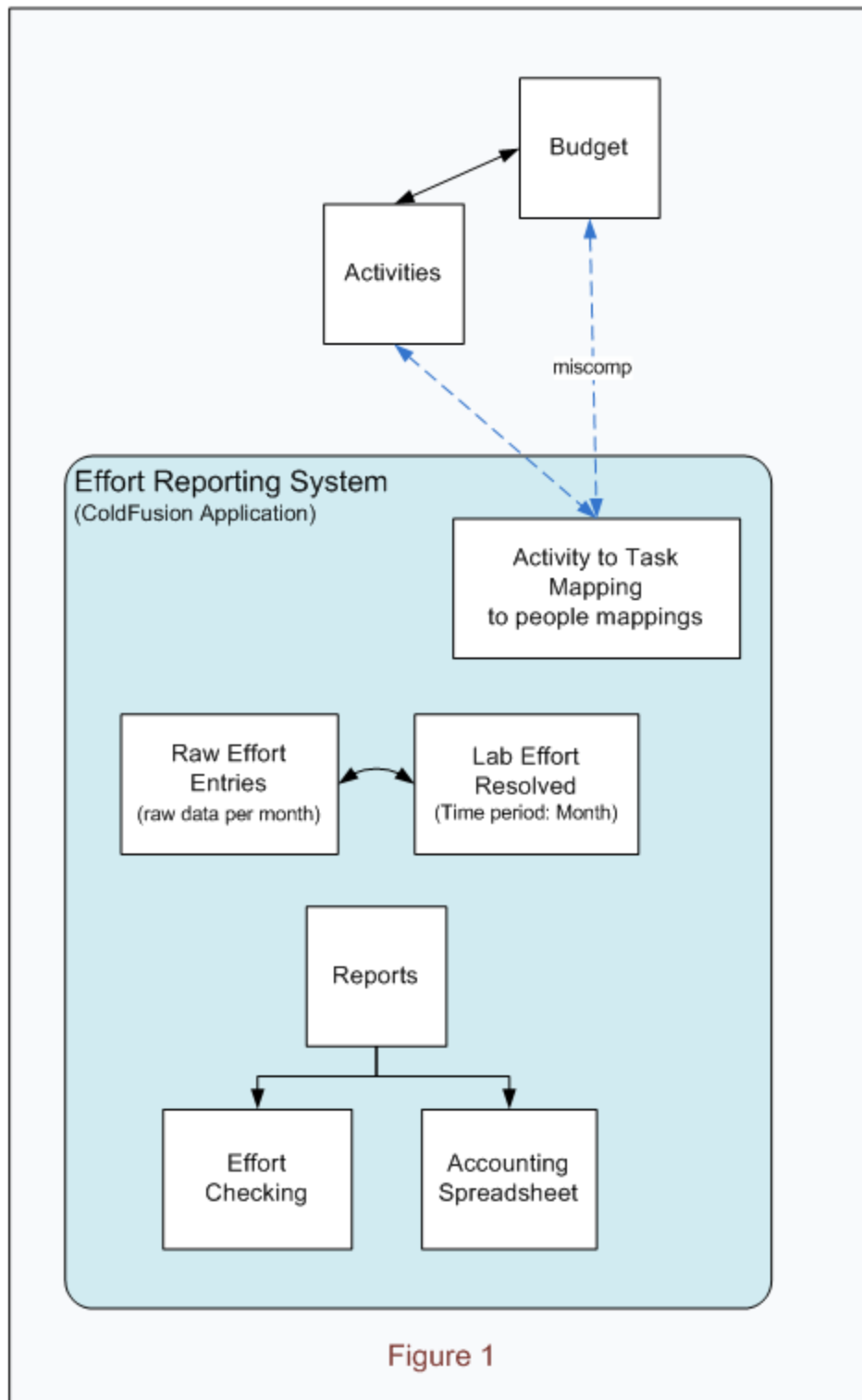- and internal DB identifiers

An **Effort Entry** is defined for:

- a time period (week, month, etc.),
- a person,
- an activity,
- a reported effort percent (what the employee entered),
- a normalized effort percent (normalized to units, full time 40 units, part time appropriate units),
- an adjusted effort percent (normalized units where effort reported to opto is distributed to non-opto activities reported in a time period),
- and internal DB identifiers

Current CD Effort Reporting System (Figure 1)

There are two applications used by CD for budgeting and employee effort reporting:

- **Budgeting:** the Budget Input (CD-BI) System which is used to enter next fiscal year's budget. The system (an ASP-MS Access application) allows departments/groups/project leaders to enter line items to request their budget. The CD budget is Activity based rather than task. New Activities are requested and approved within the CD-BI system. A single default task number (default mapping) is assigned to each activity. Activities and their default task mappings automatically populate the corresponding Oracle enterprise Database tables.

- **Employee Effort Reporting:** the CD Effort Reporting (CD-ER) System is used every month by all CD employees to enter their effort as percentages (total to 100%) to available activities as defined by the CD-BI system. The CD-ER system (a ColdFusion-Oracle application):
  - provides effort reports (including task distribution of the effort reported to an activity and distribution of effort reported to vacation, sick, unpaid leave of absence, etc. (opto) activities to non-opto activities for the reporting period) for the department/group/project leaders' effort review process and spreadsheets for distributing the employee effort to the appropriate projects-tasks in the Lab Project Accounting system
  - allows the Financial group to restrict effort entry to an activity to a certain community of people (community may be: department, group, individuals)
  - allows the Financial group to change the default mappings and/or define special activity to task mappings (special mappings) for a department/group/individual that may be split to more than one task

Current CD System   15 May, 2009

Budget

Activities

miscomp

Effort Reporting System
(ColdFusion Application)

Activity to Task
Mapping
to people mappings

Raw Effort
Entries
(raw data per month)

Lab Effort
Resolved
(Time period: Month)

Reports

Effort
Checking

Accounting
Spreadsheet

Figure 1

FTL CD Effort Reporting System

Overview (Figure 2)

On June 1, 2009 the CD exempt employees will start reporting their effort to the lab FTL system by entering weekly timecards. Non-exempt employees will continue to report their effort to the current CD-ER system until the FTL system will be able to accept their timecards.

To facilitate the department/group/project leaders' effort review process data will be extracted from the FTL system and stored in the CD Oracle enterprise Database for further analysis, calculations, reporting, and comparison with budget (CD-BI system). The Corrections system and processes will provide the means to make necessary corrections to FTL past entered effort (retro timecards) so that reported effort and approved budget are in sync.

Furthermore, the CD-BI system will be used throughout the year to refine the budget. This might require the creation of new activities, change of activity mappings (default and/or special) and uploading the changes to the FTL system.
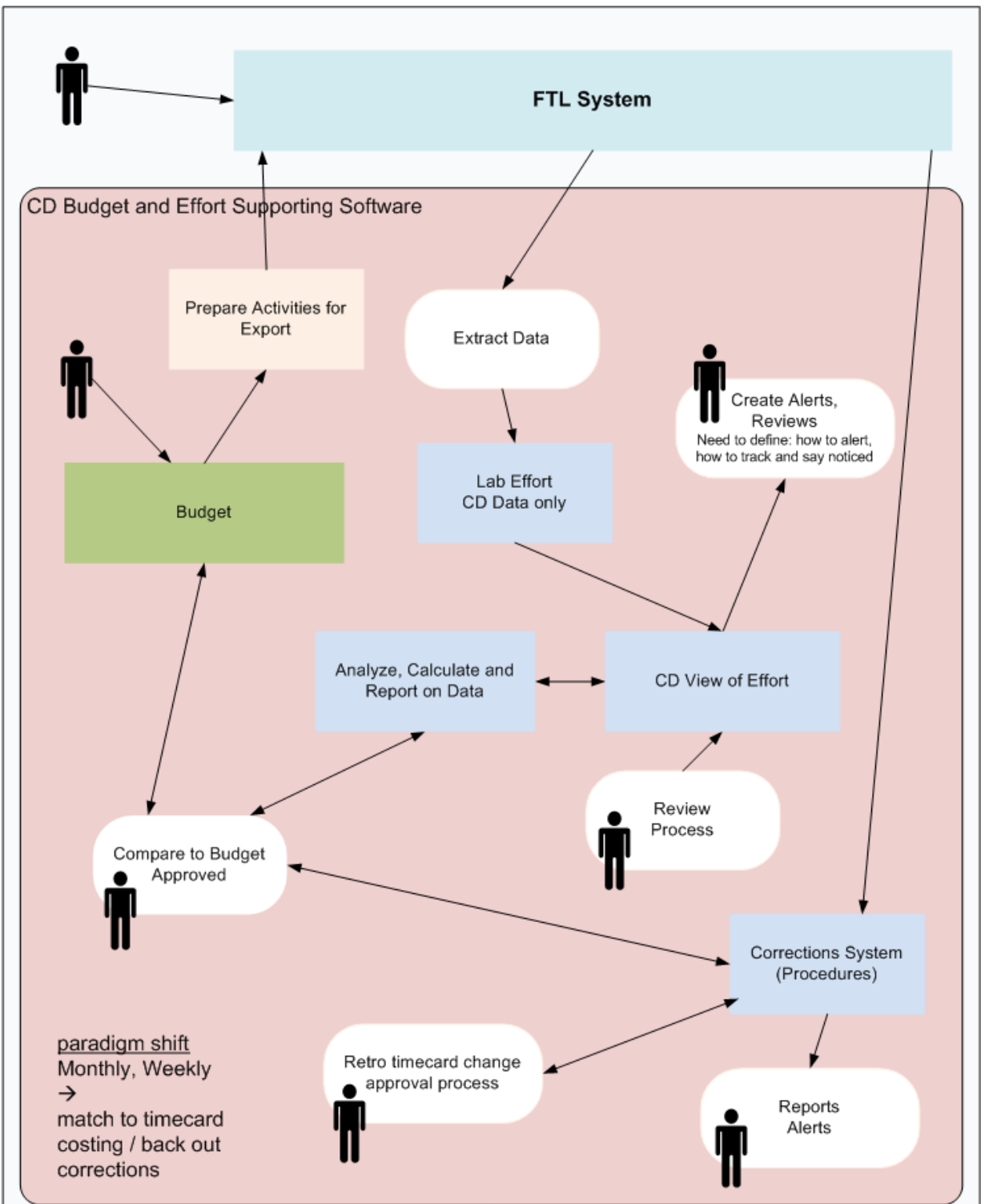
Conceptual Design of CD Effort System 15 May, 2009

FTL System

CD Budget and Effort Supporting Software

Prepare Activities for Export

Extract Data

Create Alerts, Reviews
Need to define: how to alert, how to track and say noticed

Budget

Lab Effort CD Data only

Analyze, Calculate and Report on Data

CD View of Effort

Review Process

Compare to Budget Approved

Corrections System (Procedures)

paradigm shift
Monthly, Weekly
→
match to timecard costing / back out corrections

Retro timecard change approval process

Reports Alerts

Figure 2

Conceptual Data Flow and Processes (Figure 3)

The CD-BI system provides the means to create and refine throughout a fiscal year the CD budget (SWF and M&S budget). For the exempt employees, only the SWF budget is relevant for the employee effort reporting purposes.

Users (department heads and group/project leaders) enter their SWF budget by assigning an activity, a task, a person, and an FTE fraction to a Budget Line Item (BLI). New activities and their default task mapping are created and approved by the financial approver within the CD-BI system. Once an activity is approved (following the Activity Definition Approval business process) corresponding entries are made to the Activities and Mappings (and supporting) tables.

The CD-BI system allows only one task to be assigned to an activity or BLI, so, for requesting more task mappings to an activity or creating special mappings/restrictions for a community the Activity-Task Management python application (considered part of the CD-BI system) provides the user interface (accessed through the CD-BI system and temporarily through the CD-ER system). When the requested special mappings and/or activity restrictions are approved by the financial approver appropriate entries are made to the Mappings table and its supporting tables. Nightly processes validate data entered in the CD Enterprise Database for activity name length and activity owners.

In order for CD employees to be able to report their effort to their familiar activities in the FTL system, a spreadsheet is created and loaded to the FTL system. The spreadsheet is constructed as follows:

- In the FTL system activities (named: "Alternate Name") can be assigned to an activity family (named: "Alternate Name Type") and each activity can be split up to 5 tasks.
- Each CD employee is assigned two activity families: CD_Common and one named after the employee's badge number.
- Activities that all employees can report effort to are assigned to the "CD_Common" activity family along with the common task mapping(s).
- All other activities are assigned to each employee's family (badge number) along with the task mappings specific for that employee. If an activity is restricted to certain employees, only these employees will have a listing for the activity in the spreadsheet.

In addition to the above spreadsheet CD also provides to the FTL system a spreadsheet with data on employees and their home task and a spreadsheet with employees and the activity families.

Employees enter a weekly timecard to report their effort to the appropriate activities in the lab FTL system. Timecard data may be entered/changed daily, once a week or as many times as the employee desires. Once a timecard is submitted for approval in the FTL system it cannot be changed.

The CD effort reporting system has a number of nightly/weekly processes for extracting and validating timecard data in the FTL system:

- **Nightly process for verifying and checking timecard data:** Every night a process checks for entered or changed or submitted timecards where an employee has reported effort directly to a task rather than an activity. Once such a timecard is found, an e-mail is send to the employee and the timecard approver.
- **Nightly process for checking backdated timecards:** Every night a process checks for entered, submitted or approved timecards that are for a backdated effort period (either previous weeks or previous months). Once such a timecard is found, an e-mail is send to the employee, the timecard approver, the activity owner and the project owner (project 50, 55 etc) for review purposes. If the timecard has been approved then the new timecard data replace the existing corresponding timecard data in the CD Effort_Archives table (CD Enterprise Database).
- **Weekly process to extract timecard data:** Every week after the FTL timecard approval process, all CD FTL timecard data are downloaded populating and updating the Effort_Archives table. The effort_adjusted field is updated so that opto effort is redistributed to non-opto activities over the current reporting month. Then the current Effort_Reported table is populated with summary data. It is assumed that approved timecards for the week being downloaded do not contain effort reported directly to a task as any such entries should have been corrected before their approval.

Once a month the reviewers validate the entered effort and compare it against the approved budget. If corrections are required the employee is requested to make the appropriate changes following the Review Timecard business process.
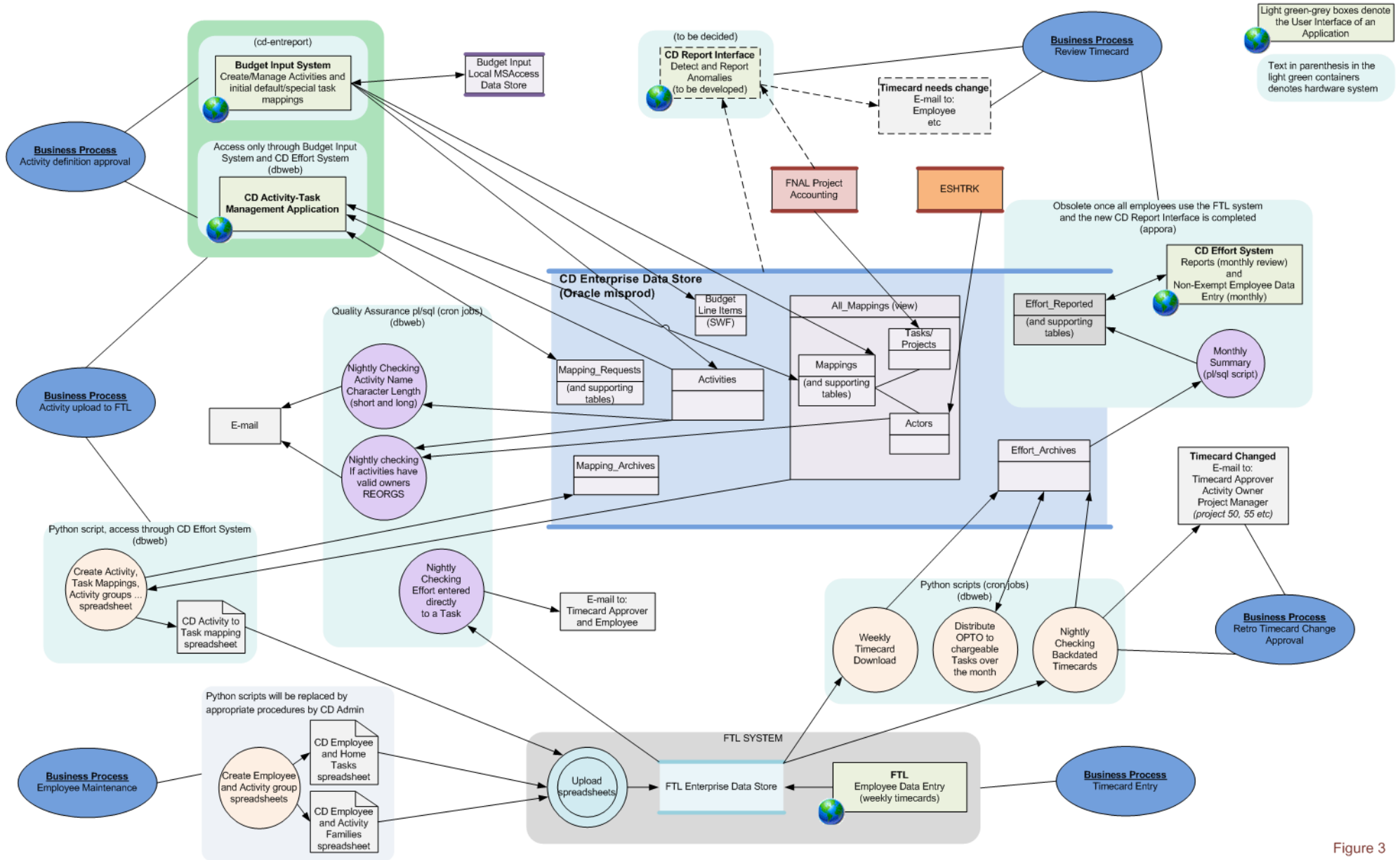
Figure 3

FTL Effort Data Flow (Figure 4)

Activities and task mappings are defined in the CD-BI and when approved are moved to the CD Enterprise Database.

Planning budget data are created in CD-BI system and when approved are moved to the CD Enterprise Database.

Activity-Task data is loaded to the FTL system

Employees enter weekly timecard data to the FTL system

Weekly processes extract data from approved timecards in the FTL system to CD Enterprise Database and populate both Effort_Archives (new table that holds the effort data) and Effort_Reported tables (old table that hold effort data from the CD-ER system).

Nightly processes validate timecard entries checking for effort entered directly to a task in the FTL system. If there are any validation errors e-mail is send to appropriate people.

Nightly processes check for backdated timecards in the FTL system. If there any backdated timecards e-mail is send to appropriate people, in addition if the timecard is approved appropriate changes are propagated to the Effort_Archives table in the CD Enterprise Database and a review process is initiated.

Leaders (department heads, group/project leaders) review monthly effort reports and compare reported effort with SWF budget. If no changes are required the appropriate projects, tasks, activities are checked-off as reviewed for the particular month. If changes are required then the reviewer initiates the timecard update process and the employee updates the appropriate timecard(s). Updated backdated timecards are processed by the nightly backdated process.

Data Flow   15 May, 2009

Figure 4